



Spectral Gamma-Ray Borehole  
Log Data Report

Page 1 of 2

Borehole

11-03-05

Log Event A

### Borehole Information

Farm : <u>AX</u>	Tank : <u>AX-103</u>	Site Number : <u>299-E25-114</u>
N-Coord : <u>41,691</u>	W-Coord : <u>47,540</u>	TOC Elevation : <u>682.62</u>
Water Level, ft :	Date Drilled : <u>12/31/1974</u>	

### Casing Record

Type : <u>Steel-welded</u>	Thickness : <u>0.280</u>	ID, in. : <u>6</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>100</u>	

### Borehole Notes:

This borehole was drilled in December 1974. It was driven to 100 ft with 6-in. casing. The casing thickness is presumed to be 0.280 in., on the basis of the published thickness for schedule 40, carbon-steel pipe. The zero depth reference is the top of the borehole pipe, which is located on the side of a soil berm, approximately 1.5 ft above the ground surface.

### Equipment Information

Logging System : <u>2</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>05/1996</u>	Calibration Reference : <u>GJPO-HAN-5</u>	Logging Procedure : <u>P-GJPO-1783</u>

### Log Run Information

Log Run Number : <u>1</u>	Log Run Date : <u>09/13/1996</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>0.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>7.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Log Run Number : <u>2</u>	Log Run Date : <u>09/16/1996</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>100.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>15.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Log Run Number : <u>3</u>	Log Run Date : <u>09/17/1996</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>16.5</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>6.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



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## Analysis Information

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Analyst : E. Larsen

Data Processing Reference : P-GJPO-1787

Analysis Date : 11/27/1996

### Analysis Notes :

This borehole was logged in three log runs. The pre- and post-survey field verification spectra met the acceptance criteria established for the peak shape and system efficiency, confirming the SGLS was operating within specifications. The energy calibration and peak-shape calibration from these verification spectra were used to establish the channel-to-energy parameters used in processing the spectra acquired during the logging operation.

Casing correction factors for a 0.280-in.-thick steel casing were applied during analysis.

The man-made radionuclide Cs-137 was identified in this borehole. The presence of Cs-137 was noted continuously from the ground surface to a depth of 4 ft. Detectable quantities (less than 0.25 pCi/g) were also noted at depths of 6.5, 10.5, and 55 ft. The contamination was detected within the back-fill material (consisting of sandy, gravelly silt) that overlies and surrounds the tank. The maximum Cs-137 concentration in the near-surface continuous zone was about 10 pCi/g.

From the ground surface to a depth of 2 ft, it was not possible to identify several of the 609-keV peaks used to determine the U-238 concentrations. This occurred because high gamma-ray activity associated with the nearby Cs-137 peak (661 keV) created an elevated Compton continuum extending to the 609-keV region, causing the MDL to exceed the measured U-238 concentration.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Reports for tanks AX-101 and AX-103.

### Log Plot Notes:

Separate log plots show the man-made radionuclide (Cs-137) and the naturally occurring radionuclides (KUT). The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

A combination plot includes the man-made and natural radionuclides, in addition to the total gamma derived from the spectral data and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL of a radionuclide, which represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.